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Annex IV(I)

DRAFT EAST AFRICAN STANDARD

Biscuits — Specification

EAST AFRICAN COMMUNITY

First Edition 2012

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that “Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose”.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

East African Community
P O Box 1096
Arusha
Tanzania
Tel: 255 27 2504253/8
Fax: 255-27-2504481/2504255
E-Mail: eac@eachq.org
Web: www.each.int

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Biscuits– Specification

1 Scope

This Draft East African Standard specifies the requirements and methods of sampling and test for biscuits intended for human consumption.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EAS 38, *General standard for the labelling of pre-packaged foods*

EAS 39, *Hygiene in the food and drink manufacturing industry – Code of practice*

EAS 103, *Schedule for permitted food additives*

EAS 217-4, *Method for the examination of foods –Part 4: Horizontal method for detection and enumeration of coliforms*

EAS 217-6, *Methods for the microbiological examination of foods — Part 6: Examination for Salmonella Spp*

EAS 217-8, *EAS ISO Methods for the microbiological examination of foods — Part 8: Enumeration of yeast and moulds in foods*

3 Terms and definitions

For the purposes of this standard, the following terms and definitions shall apply

3.1
biscuit
flat baked product characterized by a crispy texture

3.2
cream
homogenous preparation of hydrogenated fat or bakery shortening, icing sugar, permitted flavours and food colours with or without other ingredients

3.3
plain biscuits
biscuits which are not filled or coated

3.4
coated biscuits
biscuits coated with chocolate, caramel or any other similar materials

3.5
filled biscuits
biscuits sandwiched with a filling of either cream, jam, jelly, caramel, dried fruits and any other with similar filling materials

3.6
crackers
biscuits which in general show a typical flaky inner layers; may be fermented or non-fermented; oil-dipped or not and may be or may not be sprinkled with salt

3.7
wafer
very thin, light, crisp, sweet cookie or cracker, especially one of a kind eaten with ice cream

4 Essential quality and compositional requirements

4.1 Raw materials

The following raw materials used in the preparation of biscuits shall conform to the relevant East African Standards.

a) flour;

b) shortening, edible oil or fat; and

c) potable water.

4.2 Optional ingredients

In addition, the following optional ingredients if used shall conform to the relevant East African Standards:

a) cereals and cereal products;

b) starch;

c) oilseeds and oilseed products;

d) milk and milk products;

e) sugars;

f) fruit, vegetable and related products;

g) spices and condiments;

h) cocoa and cocoa products;

i) coffee and coffee products;

j) tea and tea products;

k) eggs;

l) salt;

m) enzymes and gluten conditioners;

n) food additives; and

o) essential nutrients.

4.3 Finished product

Biscuits shall:

a) be properly baked so that they are crisp, have uniform texture and are free from a burnt taste and appearance;

b) have an acceptable flavour typical of well-baked biscuits of the type;

c) be free from any soapy or bitter after-taste; and

d) be free from fungal and insect infestation, rancid taste and odour.

The design, if any, on the biscuit shall be clear.

4.4 Composition requirements for biscuits

Biscuits shall conform to the requirements as given in Table 1.

Table 1 — Compositional requirements for biscuits

S/N	Parameter	Requirement	Method of test
1	Moisture, % by mass, max.	6.0	Annex A
2	Acid insoluble ash on dry basis, % by mass, max.	0.05	Annex B
3	Acidity of extracted fat (as oleic acid), % by mass, max.	1.0	Annex D

5 Food additives

Food additives may be used in the preparation of biscuits in accordance with EAS 103.

6 Hygiene

Biscuits shall be manufactured and handled in accordance with EAS 39. Biscuits shall conform to the limits of microorganisms in Table 2.

Table 2 – Limits for microorganisms in biscuits

S/N	Microorganisms	Requirement	Method of Test
1	*E. coli*, in cfu/g, max.	<1	EAS 217-4
2	Salmonella, 25g, max.	Absent	EAS 217-6
3	Yeast and Moulds, per g, max	10^3	EAS 217-8

7 contaminants

7.1 Pesticide residues

Composite flour shall conform to those maximum residue limits for pesticide residues established by Codex Alimentarius Commission for this commodity.

7.2 Other contaminants

Composite flour shall conform to those maximum levels of the Codex General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193).

8 Packaging

Biscuits shall be packaged in suitable materials to safeguard the safety, hygienic, nutritional, organoleptic and technological qualities of the product.

9 Labelling

8.1 In addition to the requirements of EAS 38, the following specific labelling requirements shall apply and shall be legibly and indelibly marked:

a) common name of the product, “Biscuits”;

b) name and physical address of the manufacturer/ distributor and /or trade name/ brand name;

c) date of manufacture;

d) list of ingredients;

e) lot identification;

f) expiry date;

g) country of origin;

h) net weight in metric units;

i) storage instructions;

j) instructions on disposal of used package.

9.2 When labelling non-retail packages, information for non-retail packages shall either be given on the packages or in accompanying documents, except that the name of the product, lot identification and the name and address of the manufacturer or packer shall appear on the packages.

10 Weights and measures

Biscuits shall be packaged in accordance with the weights and measures requirements in the destination country.

11 Sampling

The method of drawing representative samples of biscuits and the criteria for conformity shall be as prescribed in Annex C.

12 Criteria for conformity

A lot shall be declared as conforming to this standard if samples inspected or analysed for quality requirements conform to the provisions of this standard.

Annex A
(normative)

Determination of moisture

A.1 Apparatus

A.1.1 Electric oven, maintained at 105 °C ± 1 °C

A.1.2 Moisture dish, made of porcelain, silica, glass or aluminium

A.1.3 Desiccator

A.2 Procedure

Weigh accurately about 5 g of the prepared sample (see D.3.3) in the moisture dish, previously dried in the oven and weighed.

Place the dish in the oven maintained at 105 °C ± 1°C for 4 h.

Cool in the desiccator and weigh.

Repeat the process of drying, cooling and weighing at 30-min intervals until a constant mass, *m,* is obtained.

A.3 Calculation

$$\text{Moisture, percent by mass, } = \frac{100(M - m_1)}{(M - m_2)}$$

where

M is the mass, in grams, of the dish with the sample before drying;

m_1 is the mass, in grams, of the dish with the sample after drying to constant mass; and

m_2 is the mass, in grams, of the empty dish.

Annex B
(normative)

Determination of acid insoluble ash

B.1 Apparatus

B.1.1 **Dish**, silica or porcelain

B.1.2 **Muffle furnace**, maintained at 600 °C ± 20 °C

B.1.3 **Water bath**

B.1.4 **Desiccator**

B.2 Reagent

Dilute hydrochloric acid, approximately 5mol/l, prepared from concentrated hydrochloric acid

B.3 Procedure

Weigh accurately about 10 g of biscuit powder (D.3.3.2) and transfer to a furnace at 600 °C +20 °C until light grey ash is obtained.

Remove the dish from the furnace and allow it to cool to room temperature. Add 25 mL of hydrochloric acid to the dish, cover with a watch glass and heat on a water bath for 10 minutes. Mix the contents with the tip of a glass rod and filter through Whatman filter paper No 42 or its equivalent wash the filter paper with water until the washings are free from acid when tested with blue litmus paper. Return the washed filter paper to the dish for ashing in the muffle furnace as above.

Cool the dish in a desiccator and weigh. Again ignite the dish for half an hour in the furnace, cool and weigh. Repeat this operation until the dish has a constant mass. Filter 25 mL of hydrochloric acid through a blank filter paper wash, ash and weigh it as in the case of acid insoluble ash. Subtract its mass from the mass of insoluble ash in the sample.

B.4 Calculation

B.4.1 Acid insoluble ash, percent by mass (A)

$$\frac{100(m_1 - m)}{m_2}$$

where

m is the mass, in grams, of the dish containing acid insoluble ash (see note);

m_1 is the mass, in grams, of empty dish in which the sample is taken for ashing; and

m_2 is the mass, in grams, of the sample

NOTE The acid insoluble ash mass should be corrected for the blank of filter paper, if any.

B.4.2 Acid insoluble ash, percent by mass (on dry weight basis)

$$\frac{A \times 100}{100 - M}$$

where

A is the acid insoluble ash, percent by mass (B.4.1), and

M is the percent of moisture in the biscuit sample.

Annex C
(normative)

Sampling of biscuits

C.1 General requirements of sampling

In drawing, preparing, storing and handling samples the following precautions and directions shall be observed:

a) samples shall be taken in a protected place not exposed to damp air dust or soot;

b) precautions shall be taken to protect samples, the lots being sampled, sampling instrument and containers for samples from adventitious contamination;

c) loose biscuit samples or representative small packs, shall be placed in airtight, clean and dry glass, tin or aluminium containers of appropriate size;

d) samples shall be stored at room temperature; and

e) each container containing samples shall be sealed airtight and marked with full details of sampling, such as batch or code number, name of manufacturer and other relevant particulars.

C.2 Scale of sampling

C.2.1 Lot

All biscuit containers in a single consignment drawn from the same batch of manufacture shall constitute a lot. If the consignment is declared to consist of different batches of manufacture, the batches shall be marked separately and groups of containers in each batch shall constitute separate lots. Samples shall be tested from each lot for ascertaining the conformity of biscuits to the requirements of specification.

C.2.2 Sample size

The number of containers to be sampled from each lot shall depend on the size of the lot and be in accordance with Table 2.

C.2.3 Drawing of sample

Containers shall be selected at random from each lot and for this purpose, random number tables shall be used.

Starting from any container, count them as 1, 2 up to *r* and so on in one order, where r is equal to the integral part of value *N/n. N* being the total number of containers in the lot and r^{th} number of container thus counted shall be separated until the required number of containers is obtained from the lot.

Table 2 — Number of containers to be selected for sampling

Lot size, *N*	Sample size, *n*
Up to 50	2
51-150	3
151-300	4
301-500	5
501and above	7

C.3 Test samples and referee samples

C.3.1 Drawing samples

Draw from each selected container, the required number of biscuit packets. These packets shall be opened and mixed. If the container is packed with loose biscuits, samples of required quantity shall be taken from different parts of the selected container.

C.3.2 Preparation of individual sample

From the selected containers, about 600 g of biscuits shall be taken from different parts of the container. From this about 300 g of biscuits shall be taken for testing general requirements. This 300 g of biscuits shall be divided into three equal parts, one for the purchaser, another for the vendor and the third for the referee. These biscuit samples shall be packed in airtight dry containers and labelled with particulars given in D.1.

C.3.3 Preparation of composite sample

C.3.3.1 The composite sample shall be prepared from the remaining 300 g of biscuits from each selected container, after the sample for general requirements is taken out as given in D.3.3.1.1 to D.3.3.1.3.

C.3.3.1.1 **Plain biscuits** — Grind the sample as quickly as possible.

C.3.3.1.2 **Filled biscuits** — The cream, caramel, chocolate, marshmallow, jam, jelly or any other filling between biscuits should be removed by gentle scraping, before powdering the sample.

C.3.3.1.3 **Coated and filled biscuits** — As far as possible the coating and the fillings should be removed before powdering the biscuits.

NOTE Biscuits are highly hygroscopic. Therefore preparation samples should be done very quickly, preferably in a dry place.

C.3.3.2 A small but approximately equal quantity of the material (see D.3.3.1) shall be taken from the powdered sample of each selected container and mixed thoroughly so as to form a composite sample weighing not less than 200 g. This sample shall be divided approximately into three equal parts, one for the purchaser, another for the vendor and the third for the referee. These parts shall be transferred to clean, dry and airtight containers, which are then sealed with all the particulars as given in D.1. The sample in each such sealed container shall constitute an individual test sample. These individual samples shall be separated into three identical sets of test samples in such a way

that each set has a sample representing each selected container (see Table 2). One of these sets shall be marked for the purchaser, another for the vendor and the third for the referee.

C.3.4 Referee sample

Referee samples shall consist of a set of individual biscuit samples (see D.3.2) marked for general requirements, a composite sample (see D.3.3.2) and a set of individual test samples shall bear the seals of the purchaser and the vendor. These shall be kept at a place agreed to between the two.

C.4 Number of tests

C.4.1 Biscuits selected according to D.3.2 shall be tested for general requirements.

C.4.2 The test for moisture shall be conducted individually on each of the samples constituting a set of individual test samples (see C.3.3.2).

C.4.3 Tests for the determination of acid insoluble ash and acidity of extracted fat shall be conducted on the composite sample (see C.3.3.2).

C.5 Criteria for conformity

A lot shall be declared as conforming to the requirements of the specification for biscuit when the following criteria are satisfied:

a) in the case of general requirements, biscuits shall satisfy the requirements as given in 4.1;

b) in the case of moisture, each of the test results as obtained from individual dual test samples (see C.4.2) shall be less than or equal to 6.0 % (see Table 1).

c) for acid insoluble ash and acidity of extracted fat. the test results obtained from the composite sample (see C.4.3) shall be less than or equal to 0.05 % and 1.0 % respectively (see Table 1).

Annex D
(normative)

Determination of acidity of extracted fat

D.1 Apparatus

Soxhlet apparatus, with a 250 mL flat bottom flask

D.2 Reagents

D.2.1 Petroleum ether, boiling point 40 °C – 80 °C

D.2.2 Benzene-alcohol-phenolphthalein stock solution — To 1 L of distilled benzene add 1 L of alcohol or rectified spirit and 0.4 g of phenolphthalein. Mix the contents well.

D.2.3 Standard potassium hydroxide solution, 0.05 mol/L

D.3 Procedure

Weigh accurately about 10 g of biscuit powder (D.3.3.2) and transfer it to a thimble and plug it from the top with extracted cotton and filter paper. Dry the thimble with contents for 15 min to 30 min at 100 °C in an oven. Take the mass of empty Soxhlet flask. Extract the fat in the Soxhlet apparatus for 3 h to 4 h and evaporate off the solvent in the flask on a water bath. Remove the traces of the residual solvent by keeping the flask in a hot air oven for about half an hour and weigh. Cool the flask and add 50 mL of mixed benzene-alcohol-phenolphthalein reagent and titrate hydroxide solution taken in a 10 mL microburette.

If the contents of the flask become cloudy, during nitration, add another 50 mL of benzene-alcohol-phenolphthalein reagent and continue titration. Make a blank titration of the 50 mL reagent. Subtract from the titre of the fat, the blank titre.

D.4 Calculation

Acidity of extracted fat, (as oleic acid) percent by mass = $mv-$×m411.

where

v is the volume of potassium hydroxide solution used in titration after subtracting the blank;

m is the mass in grams of Soxhlet flask containing fat; and

m is the mass in grams of empty Soxhlet flask.

